ART. 2. SYNOPSIS OF THE GENERA OF HYLID FROGS

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When I began the study of South American tree frogs of the family Hylidae I found it necessary to draft out a list of the genera that I consider valid, together with a list of the synonyms of each genus. In the hope that this list may prove useful to others concerned with the group, I have prepared it for publication so that it may be generally available.

Now surely very few people indeed will see eye to eye with me on just which genera should, and which should not, be recognized. This is partly due to subjective differences of opinion and partly due to different experiences with the forms in question. I have in the main tried to avoid either extreme but am perhaps more inclined to recognize genera for the sake of emphasizing differences rather than to synonymize them and emphasize similarities. For example, *Osteocephalus,* with the paired vocal pouches in the male and with the invariably exostosed skull, seems to me to represent a natural assemblage; I feel that it is much better for us to recognize it nomenclatorially than it is for us to mask our knowledge by simply including it in the all too large genus *Hyla.* Nor have I failed to recognize genera simply because they are difficult of definition. I believe that in many cases this difficulty may be as much due to lack of knowledge by the herpetologists as it is to the nature of the frogs in question.

Many of the genera included herein are extremely difficult to define adequately so that it is not to be expected that the keys and diagnoses will prove infallible. While many of the genera are remarkably distinct, others, such as *Pseudacris* and *Hyloscirtus,* are quite *Hyla*-like. Furthermore, some, such as *Nyctimystes* and *Agalychnis,* while surely of independent origin, are distressingly similar. As our knowledge of these difficult genera grows, our concepts of them will become clearer and more precise. Until then, keys and diagnoses of these forms must be considered tentative.

As far as the synonymies are concerned, I have made them as complete as my knowledge permitted. In such a mass of literature it is most probable that I have let some names escape my attention. I can only hope there have not been too many.

While the diagnosis and keys are designed to help identify the genera, they should in no sense be construed as attempts to point out relationships. The question of relationships among the various hylid genera is one that will offer substantial problems to students of frogs for some time to come. Thus in the present list the various "helmeted" hylids have been retained in the separate genera originally erected for them. The final decision as to which of these genera should be recognized because they represent independent derivatives of the genus *Hyla,* and which should be lumped together because they are representatives of a single homogeneous stock, will have to await more intensive and extensive anatomical studies on these frogs than have yet been made.

This list perhaps really had its origin when my friend Werner C. A. Bokermann first queried me concerning some genera he was working on. In

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attempting to answer his questions I raised many new ones that I could not let go unanswered and so, like Mr. Finney's turnip, the project grew. It was my first intention to include only South American genera, but as several South American genera range into Central America, and vice versa, it seemed only logical to include all the Middle American forms. Since only three, *Acris, Pseudacris,* and *Nyctimystes,* occur entirely outside of South and middle America, I decided to include all genera for the sake of completeness.

In addition to Mr. Bokermann, several other friends have been kind in both encouraging me to publish my list and in letting me examine material in their care. I would like to mention in particular Charles M. Bogert, American Museum of Natural History; Doris M. Cochran, United States National Museum, who first introduced me to South American frogs and with whom I am associated in a study of the frogs of Colombia; Alice G. C. Grandison, British Museum (Natural History); Prof. Jean Guibé, Museum Nacional d'Histoire Naturelle; Robert F. Inger, Chicago Natural History Museum; George S. Myers, Stanford University; Hermano Nicéforo Maria, Institute de La Salle; William Riemer, University of Florida; E. H. Taylor, formerly of the University of Kansas; Charles F. Walker, Museum of Zoology; and Ernest E. Williams, Museum of Comparative Zoölogy. The manuscript list of the Hylidae of the world by John Condit was very useful to me and I want to thank Mr. Condit for the privilege of studying it. Travel to various museums was made possible by a Grant (G-5628) from the National Science Foundation and travel to London and Paris was also aided by a grant from the American Academy of Arts and Sciences. Work on the project during the summer of 1959 was made possible by a Grant (G-8625) from the National Science Foundation.

Hylidae

The Hylidae is here considered to include frogs with procoelous vertebrae; a double condyle on the coccyx; arciferal girdle; short intercalary cartilages between the ultimate and penultimate phalanges; claw-shaped terminal phalanges.

From the other four families of frogs with intercalary cartilages it may be distinguished as follows: from the Centrolenidae in having the terminal phalanges claw-shaped rather than T-shaped; from the Pseudidae in having the intercalary cartilages disk-like rather than elongate and rod-like; and from both the Rhacophoridae and Phrynomeridae in being procoelous and arciferal rather than diplasiocoelous and firmisternal.

Acris Duméril and Bibron

1841 *Acris* Duméril and Bibron, Erpétologie génerale, v. 8, p. 506, type *Rana gryllus* LeConte.

Diagnosis. — Aquatic hylids with reduced digital disks; feet extensively webbed; sacral diapophyses but little if at all expanded.

Notes. — A North American genus with five nominal forms east of the Rocky Mountains.

Agalychnis Cope

1864 *Agalychnis* Cope, Proceedings of the Academy of Natural Science of Philadelphia, v. 16, p. 181, type *Hyla callidryas* Cope.

Diagnosis. — Vertical pupil; palpebral membrane reticulate in all except *A. calcarifer;* tongue extensively free behind; webbing well developed on feet;

first toe shorter than second; vocal pouch of male median and subgular; eyes red in life in many of the species.
Notes. — Some ten species distributed from Mexico to Ecuador.

Amphignathodon Boulenger

1882 *Amphignathodon* Boulenger, Catalogue Batrachia Salientia, p. 450, type *Amphignathodon güntheri* Boulenger.

Diagnosis. — Teeth present on mandible but not on palatine or parasphenoid; pouch present on back of female.
Notes. — A single living species, *A. güntheri,* known from the Andes of Ecuador. A fossil species from the Tertiary of Europe has been, probably erroneously, referred to this genus.

Amphodus Peters

1872 *Amphodus* Peters, Monatsberichte Akademie Wissenschaft, Berlin, p. 768, type *Amphodus wuchereri* Peters.
1923 *Lophiohyla* Mirando-Ribeiro, Boletim Museu Nacional, Rio de Janeiro, no. 1, p. 5, type *Lophiohyla piperata* Mirando-Ribeiro.

Diagnosis. — Skin of head not co-ossified with skull; roof of skull not exostosed; teeth (odontoids) on mandible, palatines and parasphenoid; a single subgular vocal pouch.
Notes. — There are three nominal species recorded in this little-known genus, *auratus, piperatus,* and *wuchereri.*

Anotheca Smith

1939 *Anotheca* Smith, Biological Society of Washington, Proceedings, v. 52, p. 190, type *Gastrotheca coronata* Stejneger.

Diagnosis. — Derm of head co-ossified with skull; no teeth on mandible, palatines, or parasphenoid; no pouch on back of female; posterior margin of helmet studded with erect, conical, bony spines; snout not produced into an anterior projecting proboscis.
Notes. — A single species, *A. coronata,* ranges from Panama to Veracruz, Mexico.

Aparasphenodon Mirando-Ribeiro

1920 *Aparasphenodon* Mirando-Ribeiro, Revista Paulista Museu, v. 12, p. 87, type *Aparasphenodon brunoi* Mirando-Ribeiro.

Diagnosis. — Derm of head co-ossified with skull to form a casque; canthal ridges fusing anteriorly and projecting beyond upper lip to form a point-like proboscis; external nares opening nearly laterally; palatine but not parasphenoid teeth present; choanae elongated; paired lateral vocal sacs in the male.
Notes. — The three nominal forms, *apicalis, adspersa,* and *brunoi,* all probably belong to a single species.

Aplastodiscus A. Lutz

1950 *Aplastodiscus* A. Lutz, *in* Lutz, B, Memórias Instituto Oswaldo Cruz, v. 48, p. 612, type *Aplastodiscus perviridis* A. Lutz.

Diagnosis. — Digital disks thin and narrow, generally no wider than digits; digits themselves narrow and frail, with poorly ossified phalanges. Otherwise *Hyla*-like.
Notes. — Very little is known about this small frog, no specimens of which are yet available in North America. Apparently it lives in open glades and

marshes in the mountainous regions of southern Brazil. *A. perviridis* is the only known species.

Cerathyla Espada

1871 *Gerathyla* Espada, Jornal de Sciencias, mathematicas, physicas et naturaes Lisboa, v. 3, p. 63, type *Cerathyla bubalis* Espada.

Diagnosis. — A well developed helmet but derm of head not co-ossified with skull; teeth or odontoids present on mandible and palatines; expanded digital pads present; eye placed midway between tip of snout and angle of jaw.

Notes. — Some half-dozen nominal species occur in the western portion of northern South America from Peru, and Amazonas, Brazil, to Panama.

Corythomantis Boulenger

1896 *Corythomantis* Boulenger, Annals and magazine of natural history, v. 17, p. 405, type *Corythomantis greeningi* Boulenger.

Diagnosis. — Derm of head co-ossified with skull to form a casque; canthal ridges not fused anteriorly and projecting not at all or little beyond the rounded tip of snout; external nares opening upward; no palatine teeth; choanae small and nearly rounded; paired lateral vocal sacs in the male.

Notes. — Three nominal species known—*greeningi, venezolana, and schubarti.*

Cryptobatrachus Ruthven

1916 *Cryptobatrachus* Ruthven, Occasional papers Museum of Zoology, no. 33, p. 1, type *Cryptobatrachus boulengeri* Ruthven.

Diagnosis. — Vomerine teeth in two nearly straight, transverse series which nearly touch on the midline and which lie behind the rounded choanae; sacral diapophyses nearly rounded; female carries the eggs on her back; eggs hatch directly into frogs; a single subgular vocal pouch in the male.

Notes. — This genus includes the nominal forms *evansi, boulengeri, incertus,* and *fuhrmanni. C. evansi* of British Guiana seems to be distinct but the status of those from the northern Andes is still in some doubt. Probably not more than two of them are valid and possibly only one valid species occurs there.

Dryomelictes Fitzinger

1838 *Sphoenorhynchus* Tschudi, Memoires Société neuchâteloise des Sciences naturelles, Neuchâtel, p. 71, type *Hyla lactea* Daudin [preoccupied by *Sphoenorhynchus* Lichtenstein, 1823, (Aves)].

1843 *Dryomelictes* Fitzinger, Systema reptilium, p. 31, type *Hyla lactea* Daudin.

1865 *Dryomelictes* Cope, Proceedings of the Academy of Natural Sciences of Philadelphia, v. 17, p. 194, type *Hyla aurantiaca auctorum.*

1938 *Sphenohyla* Lutz and Lutz, Añais Academica Brasileira de Sciencias, v. 10, p. 178, type *Hyla lactea* Daudin (substitute for *Sphoenorhynchus,* preoccupied).

Diagnosis. — Moderate to small frogs, bright green or yellowish green in life; snout very pointed and projecting in lateral view; male with the external vocal pouch made up of longitudinal folds, bounded anteriorly and posteriorly by transverse folds; a posteriorly projecting process on the ischium; reduced number of maxillary teeth [33 on one side, the greatest number now known (*lactea*)]; prefrontals not in contact. Very aquatic.

Notes. — The following known species seem to belong to this genus: *lactea,*

dorisae, planicola, orophila, habra, and *seabrai.* My friend, Werner C. A. Bokermann, says that from his study of the forms in life he does not believe that *H. nana* should be assigned to this genus. The elimination of *nana* probably makes it a more natural, compact group.

Diaglena Cope

1887 *Diaglena* Cope, United States National Museum, Bulletin v. 32, p. 12, type *Triprion spatulata* Günther.

Diagnosis. — Teeth on the palatines and parasphenoid but not the mandible; cranial derm fused to skull, and skull forming a "helmet."

Notes. — Two species, *spatulata* and *reticulata,* occur in Mexico.

Flectonotus Mirando-Ribeiro

1926 *Flectonotus* Mirando-Ribeiro, Arquivos Museu Nacional, Rio de Janeiro, v. 27, p. 109, type *Flectonotus ulei* Mirando-Ribeiro.

Diagnosis. — Rather small frogs (circa 25 mm.); a pouch on the back of the female in the form of a longitudinal, slit-like trough; derm of head co-ossified with skull. The slit-like pouch and the small size distinguish this from *Gastrotheca* while the casque head separates it from *Nototheca.*

Notes. — The species, *F. ulei,* seems to be the only one that should be included here. This is one of the two genera herein recognized that I have not seen. The other is *Aplastodiscus.*

Fritziana Mello-Leitão

1920 *Fritzia* Mirando-Ribeiro, Revista Museu Paulista, v. 12, p. 321, type *Hyla goeldi* Boulenger [preoccupied by *Fritzia,* Cambridge, 1879 (Arachnida)].

1937 *Fritziana* Mello-Leitão, ser. 5a, Brasiliana, v. 77, Companhia Editoria Nacional, São Paulo, p. 330 (substitute name for *Fritzia* Mirando-Ribeira, preoccupied).

Diagnonsis. — The only feature I know that will separate this from *Hyla* is the basin-like structure on the back of the female in which the eggs rest. Within this basin each individual egg has its own minor depression, reminiscent of the condition in *Cryptobatrachus.* I strongly suspect that careful anatomical studies will reveal the presence of structural features not associated with the life history to set this off from *Hyla.*

Notes. — A single species, *F. goeldi,* is known.

Gastrotheca Fitzinger

1843 *Gastrotheca* Fitzinger, Systema reptilium, fasc. 1, Amblyglossae, p. 30, type *Hyla marsupiata* Duméril and Bibron.

1854 *Notodelphys* Lichtenstein and Weinland, Berliner Akademische Wissenschaft, p. 373, type *Notodelphys ovifera* Lichtenstein and Weinland [preoccupied by *Notodelphys* Allman 1847 (Crustacea)].

1858 *Nototrema* Günther, Catalogue Batrachia Salientia, p. 115, type *Hyla marsupiata* Duméril and Bibron.

1858 *Opisthodelphis* Günther, Catalogue Batrachia Salientia, p. 117, type *Notodelphys ovifera* Lichtenstein and Weinland.

Diagnosis. — Medium to large-size hylids without teeth on the mandible, palatines or parasphenoid; with a well defined pouch on the back of the female, opening posteriorly either by a round, puckered aperture or by a

longitudinal slit but the pouch never a slit-like trough as in *Nototheca;* adult male with a rudimentary pouch on the back and a single, unpaired, vocal pouch; vomerine teeth in two short series; derm of the head may be co-ossified with the skull or it may be free in which case the roof of the skull is exostosed.

Notes. — A widespread genus ranging from Bolivia to Panama.

Habrahyla Goin

1961 *Habrahyla* Goin, Copeia, 1961, p. 62, type *Habrahyla eiselti* Goin.

Diagnosis. — A small tree frog with vertical pupils; tongue bilobed and free behind; rounded sacral diapophyses; unapposable thumbs; cranial derm free of skull and roof of skull not exostosed; teeth present only on the upper jaws and vomers; palpebral membrane not reticulate; webbing reduced on hands and feet.

Notes. — Known at present from a single species, *Habrahyla eiselti,* from Brazil.

Hemiphractus Wagler

1828 *Hemiphractus* Wagler, Isis von Oken, p. 743, type *Rana scutata* Spix.

Diagnosis. — A well developed helmet but with derm of head not co-ossified with skull; teeth or odontoids present on mandible and palatines; no expanded digital pads; eye closer to tip of snout than to angle of jaw.

Notes. — A single species, *H. scutatus,* occurs in Peru, Ecuador, and Amazonas, Brazil.

Hyla Laurenti

1768 *Hyla* Laurenti, Specimen medicum, exhibens synopsin, Reptilium, p. 32, type *Hyla viridis* Laurenti (designated by Stejneger, 1907, United States National Museum, Bulletin 58, p. 75).

1799 *Calamita* Schneider, Historiae amphibiorum naturalis et literariae, Ienae, fasc. 1, p. 151, type *Calamita arborea=Rana arborea* Linnaeus designated by Stejneger, 1907, United States National Museum, Bulletin 58, p. 75).

1814 *Hylaria* Rafinesque, Specchi delle Scienze, Palermo, v. 2, fasc. 7 (substitute for *Hyla).*

1825 *Boana* Gray, Annals Philosophy, n.s., v. 10, p. 214, type *Rana boans* Linnaeus.

1826 *Hylaplesia* Boie, Ferussac's bulletin, sec. 2, Sciences naturelles et de géologie, v. 9, p. 239, type *Hyla punctata* Daudin (designated by Stejneger, 1937, Copeia, p. 139). (preoccupied by *Hylaplesia* Schlegel, 1826=*Dendrobates.)*

1830 *Auletris* Wagler, Naturliches System der Amphibien, p. 201, type *(Rana) boans* Linnaeus=*Hyla boans* Daudin (designated by Stejneger, 1907, United States National Museum, Bulletin 58, p. 76).

1830 *Hyas* Wagler, Naturliches System der Amphibien, p. 201, type *Rana arborea* Linnaeus [preoccupied by *Hyas* Leach, 1815 (Crustacea)].

1830 *Hypsiboas* Wagler, Naturliches System der Amphibien, p. 200, type *Hyla palmata* Daudin.

1830 *Phyllodytes* Wagler, Naturliches System der Amphibien, p. 202, type *Hyla luteola* Wied.

1830 *Scinax* (or *Scynax)* Wagler, Naturliches System der Amphibien, p. 201, type *Hyla aurata* Wied (designated by Stejneger, 1907 United States National Museum, Bulletin, 58, p. 76).

1830 *Dendrohyas* Wagler, Naturliches System der Amphibien, p. 342 (substitute name for *Hyas,* preoccupied, *fide* Stejneger, 1907, United States National Museum, Bulletin, 58, p. 76).

1838 *Litoria* Tschudi, Memoires Société neuchâteloise des Sciences naturelles, *Neuchâtel,* p. 36, type *Litoria freycineti* Tschudi=*Hyla freycineti.*

1838 *Lophopus* Tschudi, Memoires Société neuchâteloise des Sciences naturelles, Neuchâtel, p. 32, 73, type *Lophopus marmoratus* Tschdui= *Hyla marmorata* Laurenti [preoccupied by *Lophopus* Duméril, 1837, (Polyzoa)].

1838 *Ranoidea* Tschudi, Memoires Société neuchâteloise des Sciences naturelles, Neuchâtel, p. 35, type *Ranoidea jacksonensis=Hyle jacksonensis* (Bibron, MS.).

1843 *Dendropsophus* Fitzinger, Systema reptilium, fasc. 1, p. 31, type *Hyla frontalis* Daudin.

1843 *Dryophytes* Fitzinger, Systema reptilium, fasc. 1, p. 31, type *Hyla versicolor* LeConte.

1843 *Hypsipsophus* Fitzinger, Systema reptilium, fasc. 1, p. 30, type *Hyla xerophylla* Duméril and Bibron.

1843 *Lobipes* Fitzinger, Systema reptilium, fasc. 1, p. 30, type *Hyla palmata* Daudin [preoccupied by *Lobipes* Cuvier, 1817 (Aves)].

1843 *Osteopilus* Fitzinger, Systema reptilium, fasc. 1, p. 30, type *Trachycephalus marmoratus* Bibron 1841=*Hyla septentrionalis* Boulenger 1882, nec *Hyla marmorata* Laurenti, 1876.

1843 *Phyllobius* Fitzinger, Systema reptilium, p. 30, type *Hyla albomarginata* Spix [preoccupied by *Phyllobius,* Schonherr, 1824 *(Coleoptera)*].

1856 *Centrotelma* Burmeister, Erläuterungen zur Fauna Brasiliens, enthaltend Abbildungen und ausfuhrliche Beschreibungen neuer oder ungenungend bekannter Thier-Arten, p. 97, type *Hyla infulata* Wied.

1856 *Hylomedusa* Burmeister, Erläuterungen zur Fauna Brasiliens, enthaltend Abbildungen und ausfuhrliche Beschreibungen neuer oder ungenungend bekannter Thier-Arten, p. 102, type *Hyla crepitans* Wied.

1858 *Pelodryas* Günther, Catalogue Batrachia Salientia, p. 119, type *Pelodryas caeruleus* White=*Hyla caeruleus.*

1862 *Hylella* Reinhart and Lütken, Videnskabelige Meddelelser fra den naturhistoriske Forening, Kjovenhavn, pt. 1, p. 199, type *Hylella tenera* Reinhart and Lütken (designated by Smith and Taylor, 1948, United States National Museum, Bulletin 194, p. 76).

1867 *Cinclidium* Cope, Journal of the Academy of Natural Sciences of Philadelphia, n.s., v. 6, pt. 2, p. 200, type *Cinclidium granulatum* Cope [preoccupied by *Cinclidium* Blyth, 1842 (Aves)].

1867 *Chirodryas* Kerfenstein, Nachrichten Gesellschaft der Wissenschaften, Göttingen, p. 358, type *Chirodryas raniformis* Kerfenstein=*Hyla raniformis.*

1870 *Cincloscopus* Cope, American Philosophical Society, Proceedings, v. 11, no. 84, p. 554, footnote (substitute name for *Cinclidium* Cope, preoccupied).

1870 *Cophomantis* Peters, Monatsberichte Akademie Wissenschaft, Berlin, p. 650, type *Cophomantis punctillata* Peters.

1879 *Exerodonta* Brocchi, Bulletin de la Sociéte philomathique de Paris, ser. 7, v. 3, p. 20, type *Exerodonta sumichrasti* Brocchi.

1885 *Epedaphus* Cope, American Philosophical Society, Proceedings, v. 22, pt. 4, no. 120, p. 383, type *Hyla gratiosa* LeConte.

1893 *Fanchonia* Werner, Zoologischer Anzeiger, p. 82, type *Fanchonia elegans* Werner=*Hyla aurea* (Lesson).

1899 *Hyliola* Mocquard, Nouvelles Archives du Muséum d'Histoire Naturelle, Paris, ser. 4, v. 1, p. 337, type *Hyla regilla* Baird and Girard (designated by Stejneger, 1907, United States Museum, Bulletin 58, p. 76).

1926 *Güntheria* Mirando-Ribeiro, Arquivos Museu Nacional, Rio de Janeiro, v. 27, p. 67, type *Hyla dasynotus* Günther.

1927 *Palmatorappia* Ahl, Sitzungsberichte der Gesellschaft naturforschender Freunde, Berlin, 1926, p. 113, type *Hylella solomonis* Sternfield=*Hyla atropunctata* Van Kampen.

1945 *Pseudohyla* Andersson, Arkiv. för Zoologi, v. 37A, no. 2, p. 86, type *Pseudohyla nigrogrisea* Andersson.

1953 *Limnaoedus* Mittleman and List, Copeia, 1953, p. 83, type *Hylodes ocularis* Holbrook, 1838.

Diagnosis. — Without teeth on mandible, palatine, or parasphenoid; vocal pouch in male, if present, median and subgular; pupil horizontal; sacral diapophysis well expanded in all except some of the larger forms; cranial derm not fused with skull except in a few West Indian species; neither eggs nor young carried on back of female; tympanum present and usually fairly distinct, tongue fairly well fused behind; a well developed quadratojugal; no backward projecting process on ischium; no well developed ventrolateral gland along each side.

Note. — The largest genus in the family, it contains several hundred known species, and is nearly world-wide in distribution, being absent from the Arctic and Subarctic regions and from much of Africa.

Hyloscirtus Peters

1882 *Hylonomus* Peters, Sitzungsberichte der Gesellschaft naturforschender Freunde, Berlin, I, p. 107, type *Hylonomus bogotensis* Peters [preoccupied by *Hylonomus* Dawson, 1860 (Amphibia, Stegocephalia)].

1882 *Hyloscirtus* Peters, Sitzungsberichte der Gesellschaft naturforschender Freunde, Berlin, I, p. 127, type *Hylonomus bogotensis* Peters (substitute name for *Hylonomus,* preoccupied).

Diagnosis. — No tympanum or external evidence of ear; rounded sacral diapophyses; a median subgular vocal pouch in male; vomerine teeth behind level of choanae. Life history unknown.

Notes. — I have seen three specimens of this genus. I hold with Dr. Dunn (1944) that it is a valid genus of hylid frogs but its relationships are, and must remain, questionable until more data are available. Perhaps it is related to *Cryptobatrachus.* At the present time *bogotensis* is the only known species.

Nototheca Bokermann

1920 *Coelonotus* Mirando-Ribeiro, Revista Museu Paulista, v. 12, p. 327, type *Coelonotus fissilis* Mirando-Ribeiro [preoccupied by *Coelonotus* Peters, 1855 (Pisces)].

1950 *Nototheca* Bokermann, Papéis Avulsos, v. 9, no. 14, p. 217, type *Coelonotus fissilis* Mirando-Ribeiro (substitute for *Coelonotus* Mirando-Ribeiro, preoccupied).

Diagnosis. — Rather small frogs (circa 30 mm.) with a pouch on back of female in the form of a longitudinal, slit-like, trough; derm of head not co-ossified with skull. The slit-like pouch and the small size distinguish this from *Gastrotheca,* while the free derm of the head will separate it from *Flectonotus.*

Notes. — Bokermann (1950:218) includes *fissilis, pygmaeum,* and *fitzgeraldi* in this genus.

Nyctimantis Boulenger

1882 *Nyctimantis* Boulenger, Catalogue Batrachia Salientia, p. 421, type *Nyctimantis rugiceps* Boulenger.

Diagnosis. — A large hylid with the cranial derm co-ossified with the skull; a vertical pupil; tongue nearly fused behind; without reticulations on palpebral membrane.

Notes. — This handsome frog is known to me by the type series of *rugiceps* in the British Museum and a single specimen from Ecuador in the Museum of Zoology, University of Michigan.

Nyctimystes Stejneger

1916 *Nyctimystes* Stejneger, Biological Society of Washington, Proceedings, v. 29, p. 85, type *Nyctimantis papua* Boulenger.

Diagnosis. — Pupil vertical; cranial derm not fused to skull; palpebral membrane reticulate; tongue not extensively free behind.

Notes. — A recent revision of this group (Zweifel, 1958) lists 14 species. The genus is restricted to the Papuan region, from the Moluccas to the Louisiade Archipelago.

Osteocephalus Steindachner

1862 *Osteocephalus* Steindachner, Archivo per la Zoologia l'Anatomia e la Fisiologia, Geneva, v. 2, fasc. 1, p. 77, type *Osteocephalus taurinus* Steindachner (not of Fitzinger, 1843, a *nomen nudum).*

1926 *Garbaena* Mirando-Ribeiro, Arquivos Museu Nacional, Rio de Janeiro, v. 27, p. 95, type *Garbaena garbei* Mirando-Ribeiro.

Diagnosis. — Males with paired vocal pouches, one at each angle of the jaw; derm of head not co-ossified with skull but roof of skull exostosed.

Notes. — There are perhaps eight or ten species of this genus in South America. Certainly *taurinus, britti, leprieuri, buckleyi* and *pearsoni* belong here. *O. planiceps* is surely a synonym of *leprieuri* and I believe that *garbei* is as well. The status of such forms as *macrotis, riopastazae,* and *depressa* has not yet been settled.

Phrynohyas Fitzinger

1843 *Phrynohyas* Fitzinger, Systema reptilium, p. 30, type *Hyla zonata.*

1862 *Scytopis* Cope, Proceedings of the Academy of Natural Sciences of Philadelphia, v. 14, p. 354, type *Scytopis hebes* Cope.

Diagnosis. — Skin of head not co-ossified with skull and roof of skull not exostosed; skin of nape and shoulder region thickened; no postorbital process on frontoparietal bone; vomerine teeth forming two short, transverse series between the small, rounded choanae; male with paired, lateral vocal pouches.
Notes. — In his recent (1956) revision, Duellman lists seven species in this genus, three of which (*hebes, ingens* and *zonata)* are South American. Probably another half dozen South American species now masquerading as *Hyla* also belong here.

Phyllomedusa Wagler

1830 *Phyllomedusa* Wagler, Naturliches System der Amphibien, München, p. 201, type *Rana bicolor* Boddaert.
1866 *Pithecopus* Cope, Journal of the Academy of Natural Sciences of Philadelphia, ser. 2, v. 6, p. 86, type *Hyla hypochondrialis* Daudin.
1872 *Hylomantis* Peters, Monatsberichte Akademie Wissenschaft, Berlin, p. 772, type *Hylomantis aspera* Peters.
1923 *Phrynomedusa* Mirando-Ribeiro, Boletim Museu Nacional, Rio de Janeiro, p. 3, type *Phrynomedusa fimbriata* Mirando-Ribeiro.
1926 *Bradymedusa* Mirando-Ribeiro, Arquivos Museu Nacional, Rio de Janeiro, p. 104, type *Bradymedusa moschata* Mirando-Ribeiro=*Phyllomedusa rohdei* Mertens.

Diagnosis. — Vertical pupil; palpebral membrane not reticulate; tongue extensively free behind; webbing reduced on feet; in most of the species the first toe longer than the second (if it is shorter it is accompanied by reduced webbing on the feet). Because of the lack of palpebral reticulation *Agalychnis calcarifer* will probably key out to this genus in the accompanying key but the webbing on its feet and its short first toe should serve to place it as an *Agalychnis.*

Notes. — There are about twenty-five species of *Phyllomedusa.* The genus ranges from Central America to Argentina. A recent revision (Funkhouser, 1957) includes *Agalychnis* in *Phyllomedusa* but the arguments for doing so do not to me seem convincing.

Plectrohyla Brocchi

1877 *Plectrohyla* Brocchi, Bulletin de la Société philomathique de Paris, ser. 7, v. 1, p. 93, type *Plectrohyla guatemalensis* Brocchi.
1877 *Cauphias* Brocchi, Bulletin de la Société philomathique de Paris, ser. 7, v. 1, p. 129, type *Plectrohyla guatemalensis* Brocchi.

Diagnosis. — No quadratojugal; a well developed spine on the prepollex; teeth not present on palatines or parasphenoid.
Notes. — This genus of about a half dozen species is distributed in Mexico and Central America. While a number of South American representatives of the genus *Hyla* have a well developed, projecting spine on the prepollex, they differ from *Plectrohyla* in having well developed quadratojugals.

Pseudacris Fitzinger

1843 *Pseudacris* Fitzinger, Systema reptilium, fasc. 1, Amblyglossae, p. 31, type *Rana nigrita* LeConte.
1854 *Chorophilus* Baird, Proceedings of the Academy of Natural Sciences of Philadelphia, v. 7, p. 59, type *Rana nigrita* LeConte.

1854 *Helocaetes* Baird, Proceedings of the Academy of Natural Sciences of Philadelphia, v. 7, p. 59, type *Pseudacris triseriata* (designated by Schmidt, 1953, Check list of North American amphibians and reptiles, ed. 6, p. 73.)

Diagnosis. — More or less terrestrial hylids with reduced digital disks; very reduced webs on toes; sacral diapophyses only moderately expanded.

Notes. — A North American genus with a dozen nominal forms, species and subspecies. I have never seen the neotropical species *cuzcanus* Cope which is at times referred to this genus (Lutz, 1950: 634). It may prove to be an *Aplastodiscus.*

Pternohyla Boulenger

1882 *Pternohyla* Boulenger, Annals and magazine of natural history, ser. 5, v. 10, p. 326, type *Pternohyla fodiens* Boulenger.

Diagnosis. — Cranial derm fused to skull; a secondary bony growth forming a low ridge along edge of upper jaw; no teeth on mandibles, palatines or parasphenoid.

Notes. — A single species, *fodiens,* known from Mexico and Arizona.

Ptychohyla Taylor

1944 *Ptychohyla* Taylor, Kansas University Science Bulletin, v. 30, p. 41, type *Ptychohyla adipoventris* Taylor.

Diagnosis. — The characters of *Hyla* but with a well developed ventrolateral gland along each side.

Notes. — A small genus with but four valid species. The genus is restricted to Central America and southern Mexico.

Smilisca Cope

1865 *Smilisca* Cope, Proceedings of the Academy of Natural Sciences of Philadelphia, v. 17, p. 194, type *Smilisca daulinia* Cope=*Hyla baudini* Duméril and Bibron.

Diagnosis. — A pair of postorbital projections on the frontoparietal bones; *M. depressor mandibulae* with two distinct heads, one of which originates on the squamosal; vocal sac in male subgular with a tendency toward pairing.

Notes. — The genus ranges from Mexico to Colombia and includes four species: *baudini, gabbi, phaeota,* and *wellmanorum.*

Tetraprion Stejneger and Test

1891 *Tetraprion* Stejneger and Test, United States National Museum, Proceedings, v. 14, p. 167, type *Tetraprion jordani* Stejneger and Test.

Diagnosis. — Derm of head co-ossified with skull and skull strongly exostosed; teeth on vomers, palatines, and parasphenoid; no teeth on mandible.

Notes. — The single species, *jordani,* is the only one known for this rare genus.

Trachycephalus Tschudi

1838 *Trachycephalus* Tschudi, Memoires Société neuchâtelaise des Sciences naturelles, Neuchâtel, v. 2, p. 33, 74, type *Trachycephalus nigromaculatus* Tschudi.

Diagnosis. — Paired vocal pouches in male, one at each angle of jaw; cranial derm co-ossified with skull.

Notes. — The several forms described in this genus are probably nothing but individual variations of a single, somewhat variable species, *nigromaculatus. See* Cochran, 1954 (1955), p. 208.

Triprion Cope

1865 *Pharyngodon* Cope, Proceedings of the Academy of Natural Sciences of Philadelphia, v. 17, p. 193, type *Pharyngodon petasatus* Cope [preoccupied by *Pharyngodon* Diesing 1861 (Helminthes)].

1866 *Triprion* Cope, Proceedings of the Academy of Natural Sciences of Philadelphia, v. 18, p. 127, type *Pharyngodon petasatus* Cope (substitute for *Pharyngodon* Cope, preoccupied).

Diagnosis. — Pupil vertical; teeth on parasphenoid but not palatines; cranial derm fused to skull; a well developed proboscis; canthal ridges fused to form a median ridge.

Notes. — A single species, *petasatus,* occurs in northern Yucatan.

KEY TO THE GENERA OF HYLID FROGS

1	Teeth or odontoids present on mandible	2
1′	No teeth or odontoids present on mandible	5
2	No parasphenoid teeth	3
2′	Parasphenoid teeth present	*Amphodus*
3	Palatine teeth present	4
3′	No palatine teeth	*Amphignathodon*
4	Expanded digital pads present; eye placed midway between snout and angle of jaw	*Cerathyla*
4′	No expanded digital pads present; eye placed closer to tip of snout than to angle of jaw	*Hemiphractus*
5	Palatine teeth present	6
5′	No palatine teeth	9
6	Parasphenoid teeth present	8
6′	No parasphenoid teeth	7
7	Snout produced into proboscis; canthal ridges fusing into median ridge anteriorly	*Aparasphenodon*
7′	Snout not produced into projecting proboscis; canthal ridges not fusing anteriorly	*Trachycephalus*
8	Tip of snout notched and not projecting in the form of a strongly developed proboscis; canthal ridges not confluent anteriorly	*Tetraprion*
8′	Tip of snout unnotched and produced anteriorly in the form of a well developed proboscis; canthal ridges confluent anteriorly	*Diaglena*
9	Pupil vertical	10
9′	Pupil horizontal	15
10	Derm of head co-ossified with skull	11
10′	Derm of head not co-ossified with skull	12
11	Snout produced into a projecting proboscis; parasphenoid teeth present	*Triprion*
11′	Snout not produced into a projecting proboscis; no parasphenoid teeth	*Nyctimantis*
12	Palpebral membrane reticulate	14
12′	Palpebral membrane not reticulate	13

13 Tongue distinctly bilobed behind; sacral diapophyses rounded; bright markings, if present, on surfaces exposed while frog is at rest ..... *Habrahyla*
13′ Tongue indistinctly or very weakly bilobed behind; sacral diapophyses expanded; bright markings, if present, on surfaces concealed while frog is at rest ..... *Phyllomedusa*

14 Tongue extensively free behind; eye often red in life ..... *Agalychnis*
14′ Tongue only partially free behind; eye not red in life ..... *Nyctimystes*

15 Vocal pouches paired in male 16
15′ Vocal pouches not paired in male 19

16 Vocal pouches at angle of jaws 17
16′ Vocal pouches subgular ..... *Smilisca*

17 Cranial derm free of skull 18
17′ Cranial derm co-ossified with skull ..... *Corythomantis*

18 Cranial derm thin; roof of skull exostosed ..... *Osteocephalus*
18′ Cranial derm thickened and somewhat glandular; roof of skull smooth ..... *Phrynohyas*

19 Eggs carried on back of female 20
19′ Eggs not carried on back of female 24

20 Eggs in a definite pouch on the back 21
20′ Eggs may be placed in a basin on the back or each may rest in its individual depression but no definite pouch present 23

21 Pouch with transparent walls and a longitudinal dorsal slit-like opening 22
21′ Pouch walls not transparent; opening either puckered or slit-like but the opening posterior rather than dorsal ..... *Gastrotheca*

22 Cranial derm co-ossified with skull ..... *Flectonotus*
22′ Cranial derm free of skull ..... *Nototheca*

23 Each egg in individual depression, no basin-like structure; thighs somewhat thick for a hylid, more *Rana*-like ..... *Cryptobatrachus*
23′ Each egg may or may not be in an individual depression but entire egg mass in a basin-like structure; thighs not thickened and not *Rana*-like ..... *Fritziana*

24 Cranial derm free of skull, or if co-ossified then posterior margin of skull not margined with a row of high, conical, erect, bony spines 25
24′ Cranial derm co-ossified with skull and posterior margin of skull margined with a row of high, conical, erect, bony spines ..... *Anotheca*

25 Digital disks greatly reduced, but little wider than digits 26
25′ Digital disks not reduced, distinctly wider than digits 28

26 Webs on feet reduced 27
26′ Webs not reduced on feet, extending nearly to tips of toes ..... *Acris*

27 Snout-vent length greater than 35 mm., South American ..... *Aplastodiscus*
27′ Snout-vent length 35 mm. or less, North American ..... *Pseudacris*

28 Cranial derm not co-ossified with skull, or if so fused then secondary bony growth not forming a low ridge along edge of upper jaw 29
28′ Cranial derm co-ossified with skull and secondary bony growth forming a low ridge along edge of upper jaw ..... *Pternohyla*

29 No projecting rudiment of a pollex, or if such is present there is also a quadratojugal bone present 30
29′ A projecting rudiment of a pollex, but no quadratojugal bone present ..... *Plectrohyla*

30 Without a large ventrolateral gland along each side 31
30′ A large ventrolateral gland along each side ..... *Ptychohyla*

31 Tympanum generally present with the sacral diapophyses generally expanded 32
31′ Tympanum indistinct or absent and sacral diapophyses rounded ..... *Hyloscirtus*

32 Males with vocal pouch on the posterior margin of throat region made of a number of longitudinal folds bounded anteriorly and posteriorly by transverse folds; snout pointed and projecting; a posteriorly projecting process on the ischium ..... *Dryomelictes*
32′ Males without vocal sac as described above and without posteriorly projecting process on ischium ..... *Hyla*

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